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FEBRUARY 11, 1955

Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL BRANCH

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AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey Section
Plant Pest Control Branch
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Volume 5 February 11, 1955 No. 6

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

YELLOW CLOVER APHID showing up in Texas. Continues active in Arizona and California. (page 107).

BEET LEAFHOPPER outlook for Nevada, Utah and western Colorado. (page 108).

FOREST TENT CATERPILLAR infestation in Minnesota. (see map after page 110). Outlook in Vermont. (page 110).

EUROPEAN CHAFER detection survey-1954. (page 111).

Summary of INSECT CONDITIONS-1954-in Iowa (page 113) and Oregon (page 119).

SURVEY METHODS for some livestock pests. (page 125).

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Reports in this issue are for the week ending February 4, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING FEBRUARY 7, 1955

Widespread precipitation which replenished soil moisture and water supplies in most of the South and furnished a protective snow cover for the winter grain crop in middle and northern areas east of the Rocky Mountains was the main weather feature of the week.

Weekly precipitation totals of 1 to 6 inches from central Texas to Georgia caused a sharp rise in rivers and small streams in the South, with flooding occurring along many of the latter near the end of the week. In most of the Ohio Valley where precipitation generally totaled over an inch some small streams also were overflowing as frozen ground prevented the moisture from soaking into the soil. Moisture conditions were much improved in the lower Great Plains, except in the Oklahoma Panhandle, the western third of Texas, and eastern New Mexico where heavy rains are needed to furnish adequate moisture. New Orleans reported that during the night of the 5th, 1 inch of rain fell in 5 minutes setting a new 60-year record for the station.

Temperatures for the week averaged above normal along the Canadian Border west of the Great Lakes and in the Gulf States, but averaged below normal elsewhere, particularly in the Southwest and Northeast. The lowest temperatures in the far Southwest occurred on the 3d and 4th when the minima fell to subfreezing levels along the central coast of California and in virtually all interior sections of the State and heavy frost occurred in all of the southern valleys of Arizona; no serious crop damage was reported, however. Maverick, Ariz., recorded -20° on the 4th. In the Northeast weekly averages and minimum temperatures were the lowest thus far this winter. Presque Isle, Maine, had a low of -42° on the 1st and Brookville, Pa., -20° on the 4th, and zero occurred in the New York City area on the morning of the 3d. The temperature dropped to 10° at Washington, D. C. on the 3d, the lowest in that city since January 31, 1948.

The week's snowfall increased the snowpack in the Cascade Mountains by as much as 2 feet, and increases of a few inches were general in the Rocky Mountains, but no gains were reported in the Sierra Nevada Mountains. East of the Rocky Mountains an inch or more of snow covered the ground north of a line extending from near Dodge City, Kans., to Harrisburg, Pa., and thence northeastward to the vicinity of Portland, Maine. Severe glaze occurred in south-central and southeastern Kansas and southwestern Missouri on the 4th; snowfall was heavy in these areas and depths ranged up to 10 inches at the end of the period. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

YELLOW CLOVER APHID (Myzocallis trifolii) - TEXAS - Heavy spotted infestations on alfalfa in Brazos River bottom of Burleson County. (Randolph, Hanna). Light to medium infestations of Myzocallis sp. prob. trifolii on alfalfa in Hale County. (Simonds). ARIZONA - Populations very low on alfalfa at Mesa. All specimens found were wingless. (Ariz. Coop. Rept.). CALIFORNIA - Found north of Tehachapi Mountains for the first time. Single specimen taken on alfalfa at Edison, Kern County, January 25. (Keifer, Armitage).

GREENBUG (Toxoptera graminum) - TEXAS - Light infestation on wheat in Hale County. Two to four per linear foot. (Simonds).

COWPEA APHID (Aphis medicaginis) - TEXAS - Medium local infestations on alfalfa in Falls County. (Atkins). Heavy local infestation on vetch in Milam County and light local on alfalfa in Robertson County. (Davis).

APHIDS - TEXAS - Medium to heavy widespread on vetch, alfalfa and clovers in Washington County. (Weaver, Davis).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Adults beginning to appear in some alfalfa fields near Mesa. (Ariz. Coop. Rept.).

EUROPEAN CORN BORER (Pyrausta nubilalis) - OREGON - Living larvae found in a feed mill at Portland in small pieces of stalk and cob in bulk corn shipped in from a middle western state. (Larson, Stephenson). This note should not be construed to mean that there is an established infestation of this pest in Oregon, but rather that it has been collected as an interception.

WHITE GRUBS (Phyllophaga sp.) - TEXAS - Heavy local infestation in a pasture near Columbus. One pasture of 125 acres averaged 5 to 6 grubs per square foot. (Gregg, Moore).

A CHAFER (Anomala sp.) - NORTH CAROLINA - Heavy infestation of larvae in soil in a field of lespedeza in Beaufort County. (Peed).

FRUIT INSECTS

SIX-SPOTTED MITE (Tetranychus sexmaculatus) - FLORIDA - Infestations expected to be worse in citrus this spring than since 1951. (Pratt, Thompson, Johnson).

PURPLE SCALE (Lepidosaphes beckii) - FLORIDA - Activity increasing in citrus and present indications are that infestations will be heavy this spring. While some groves heavily infested, general activity not expected to reach high level before end of February. Peak hatch expected in late March. (Pratt, Thompson, Johnson).

CITRUS RED MITE (Metatetranychus citri) - FLORIDA - Population expected to be generally high on citrus unless abundant spring rains occur. (Pratt, Thompson, Johnson).

FIRE ANT (Solenopsis geminata) - TEXAS - Heavy local infestation on young citrus that was banked in Hidalgo County. Several trees killed, and 75 percent of the trees were damaged. (Dean, Davis).

TRUCK CROP INSECTS

Beet Leafhopper Outlook for Nebada, Utah and western Colorado
Late January survey studies in southwestern Arizona have shown that 43 percent of the 10-mile sample points on a 750-mile transect over a large portion of the breeding grounds had a wide spread germination of annual host plants compared to 27 percent in 1954. The predominant host plants, Plantago insularis and Lepidium densiflorum, were both capable of breeding large populations of leafhoppers. The unit leafhopper population in the above area in 1955 averaged 0.03 per square foot compared to 0.008 in 1954. In past experience, host plant acreage and unit leafhopper population of the quantity observed in 1955, have been associated with migrations of the beet leafhopper of moderate magnitude to the cultivated regions of central Arizona, southeastern California, southern Nevada, Utah and western Colorado in March, April and May. The number of leafhoppers will be increased as a result of generations in the areas of different elevations for the movements in the three months. Abnormal precipitation in January, 1955, has provided sufficient moisture to germinate host plants of the beet leafhopper in many portions of the breeding grounds in southeastern California, southwestern Arizona, southern Nevada and southern Utah. Precipitation of June, July, August and September maintained summer annual plants in fair condition in a portion of the above area and thus provided host plants for the leafhopper. The October to December precipitation was not favorable for beet leafhopper host plants, however, the insects were able to sustain themselves on the summer annuals and carry over on perennials until the appearance of host plants in January. Additional precipitation that can be expected in February and March would sustain the present host plants and possibly increase

the acreage of plants. If this condition should occur it would be favorable to the leafhopper and the magnitude of the migration might be even larger. In the absence of high velocity winds which might dry out the soil in the breeding grounds, the present precipitation is sufficient to assure maturity of the present host plants. In many areas the soil moisture appeared sufficient to germinate host plants, however, the below normal temperatures of January had retarded plant growth. Tests are now underway to determine the percentage of the winter population of the beet leafhopper that is viruliferous.

This survey was conducted in cooperation with survey entomologists of the respective States. (Dorst).

CABBAGE APHID (Brevicoryne brassicae) - ARIZONA - Abundant on cabbage, cauliflower and broccoli in the Salt River Valley. (Ariz. Coop. Rept.). TEXAS - Light local infestation on cabbage in Hidalgo County. Not yet heavy enough to warrant controls. (Wene, Davis).

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - Medium to heavy spotted infestation on cabbage in Hidalgo County. Appearing in fields not getting scheduled applications. Two to 3 per head. (Wene, Davis).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - TEXAS - Heavy spotted local infestation on eggplants in Hidalgo County, preventing plants from setting fruit. Leaves have lost color. (Wene, Davis).

VARIEGATED CUTWORM (Peridroma margaritosa) - TEXAS - Medium to heavy widespread on onions in Hidalgo and Webb Counties. Control needed in some fields. (Davis, Wene, Talcot).

CORN EARWORM (Heliothis armigera) - TEXAS - Light local infestation on lettuce in Hidalgo County. (Wene, Davis).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Beginning to appear on spring lettuce in Maricopa County. (Ariz. Coop. Rept.).

CELERY LEAF TIER (Udea rubigalis) - ARIZONA - Common on celery at Tolleson. Platynota sp. also involved. (Ariz. Coop. Rept.).

DARKLING BEETLES - TEXAS - Heavy scattered widespread infestation on tomato seedlings in the Rio Grande Valley area. (Wene, Griffith, Davis).

WIREWORMS - TEXAS - Medium widespread on watermelons in Brooks County. (Murphy).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

FOREST TENT CATERPILLAR (Malacosoma disstria) - VERMONT- Egg mass surveys indicate that noticeable defoliation may be expected this spring in Addison, Rutland, Windham and Windsor Counties. (Walker in "Agriview").

CAMELLIA SCALE (Lepidosaphes camelliae) - NORTH CAROLINA - Infestation reported from Alamance County. (Scott).

INSECTS AFFECTING MAN AND ANIMALS

NORTHERN FOWL MITE (Bdellonyssus sylviarum) - MARYLAND - Severely infesting 2,000 chickens on a poultry farm in Queen Annes County. Control applied. (U. Md., Ent. Dept.).

COMMON CATTLE GRUB (Hypoderma lineatum) - WYOMING - Five to 29 larvae per animal in Goshen County. Control underway. (Poyner).

CATTLE LICE - WYOMING - Widespread in Goshen County. Control satisfactory in sprayed herds. (Poyner).

STORED-PRODUCT INSECTS

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - ARIZONA - Moderate infestation in stored sorghum in Pima County. (Ariz. Coop. Rept.).

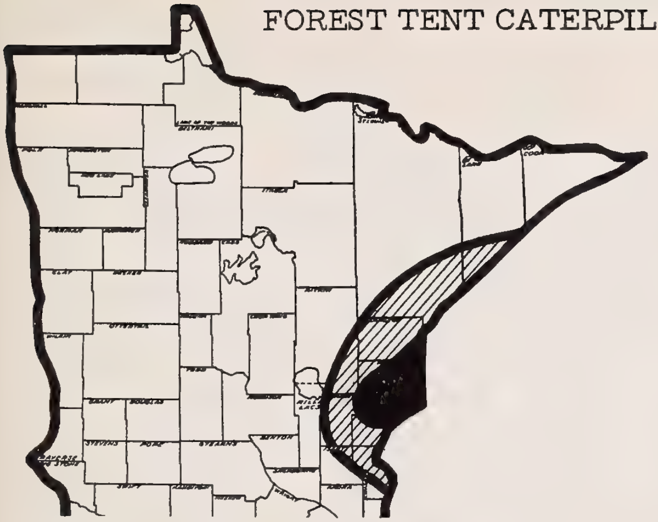
MISCELLANEOUS INSECTS

GERMAN COCKROACH (Blattella germanica) - WYOMING - Two very severe infestations investigated. Controls satisfactory. (Poyner).

CASEMAKING CLOTHES MOTH (Tinea pellionella) - NORTH CAROLINA - Heavy infestation in a home in Burke County. (Jones).

FIREBRAT (Thermobia domestica) - WYOMING - Concern to some householders, especially in basement apartments. (Poyner).

FOREST TENT CATERPILLAR INFESTATION IN MINNESOTA



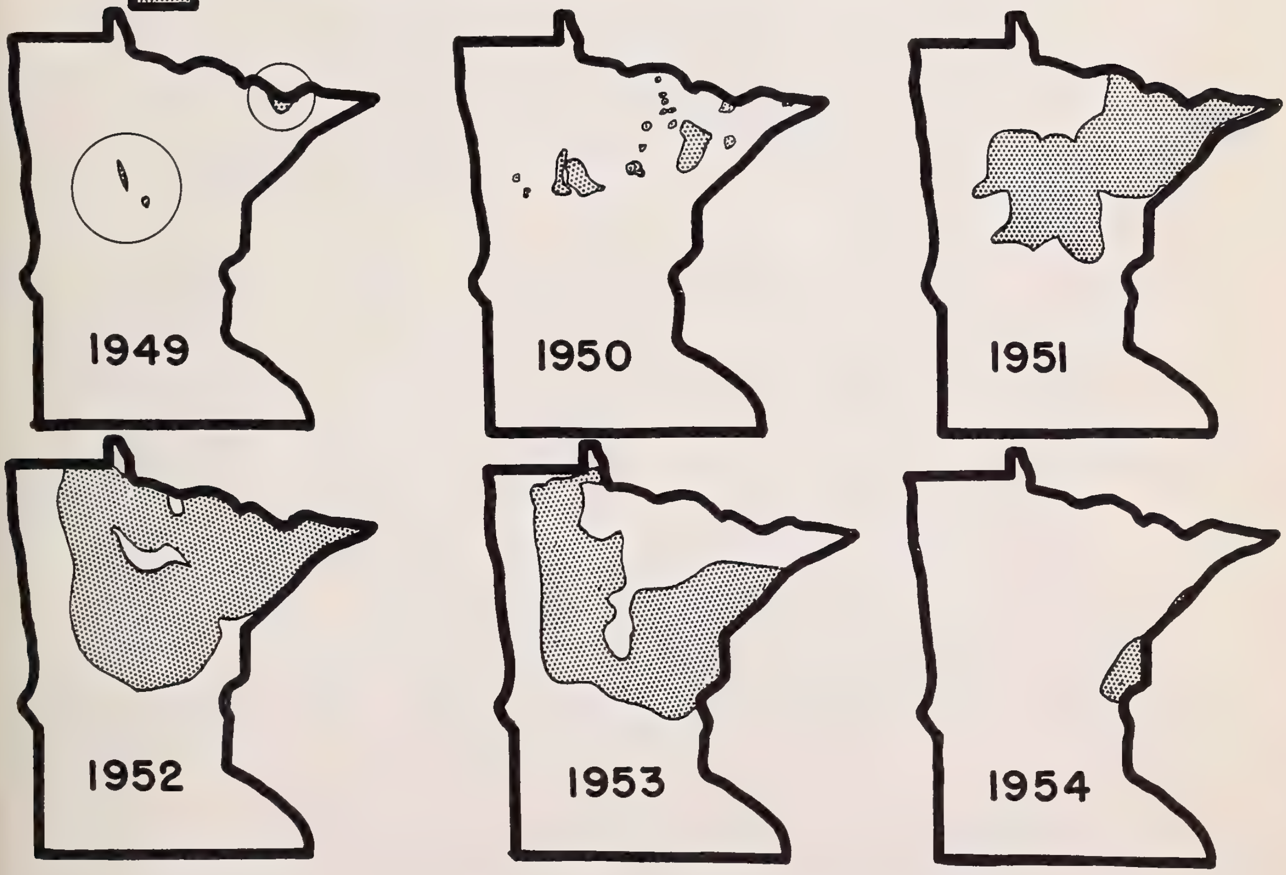
Defoliation (predicted) 1955

■ Heavy

▨ Light to Moderate

(Prepared by Office of State Ent.)

▒ Moderate and Heavy Defoliation (1949 - 1954)



European Chafer Detection Survey - 1954

Trapping surveys to determine the presence of the EUROPEAN CHAFER (Amphimallon majalis) were conducted cooperatively in 12 states in 1954 outside of New York. Nearly 300 bucket-type traps (baited with 1 part eugenol and 3 parts oil of citronella, Java type) were set out in the following states: Connecticut, Illinois, Indiana, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, Ohio, Pennsylvania, West Virginia and Wisconsin. Chafers were trapped in Meriden, Connecticut and near Capon Bridge, West Virginia. This was the first collection of the European chafer in the latter State. Only 8 traps were set up at Capon Bridge but about 50 specimens were collected in 5 of these. The chafers were trapped adjacent to a planting of coniferous trees shipped to West Virginia from an infested area. In Connecticut 10 chafers were trapped, 17 caught by hand and about 50 observed in flight. All collections as well as specimens observed in flight in Connecticut were at the site of the original infestation in that State which was reported in July 1951. Prior to the collection in West Virginia, the species have been found in the United States only in Meriden Connecticut and western New York. This was the first year that traps were used for chafer collection purposes in Maryland, Ohio, Pennsylvania and West Virginia. (Shockley).

RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Of unusual interest recently was the interception of living pupae of Dasyneura affinis (Kieff.), the violet midge, in the leaves of a violet plant in the mails from England at Hoboken, N. J. (Limber) Ten galls containing many pupae and pupal cases were found in the leaves of one plant in a shipment of three. This insect has been reported injurious to wild and cultivated violets in Europe and Africa. Serious damage to cultivated violets has been recorded in England, France, Italy and Egypt. Injury to violets by this insect, which has also been called the violet leaf midge and the violet leaf rolling midge, is due to the larval feeding that causes the margins of the leaves to curl upward, discolor, and become malformed. In heavy infestations, the entire plant may be miss-shapen and dwarfed. Flower production may be reduced and even death of the plant may follow.

Life history studies seem to indicate the eggs are deposited in the leaf tissue along the margins of the older outer leaves or within the rolled edges of the younger leaves. The larvae feed gregariously inside the leaf which soon thickens into a gall. As many as 24 larvae have been found in a single gall. The larvae complete their development, spin their cocoons and pupate in the galls. The life cycle varies from one to six months according to the climate. Several generations a year may occur.

D. affinis has been reported from Sweden, Denmark, Hungary, Italy, Roumania, Algeria, Morocco, Egypt, France, Portugal, and Great Britain. It is not known to occur in the United States. (Compiled - Plant Quarantine Branch).

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CORRECTION:
CEIR 5 (5) 92 - The GEORGIA note on the FRUIT FLY (Drosophila repleta) should have been credited to W. E. Blasingame.

SUMMARY OF INSECT CONDITIONS-1954

IOWA

Prepared by Entomology Staff
Iowa State College

EUROPEAN CORN BORER (*Pyrausta nubilalis*) populations and damage reached the second highest level recorded, being exceeded only by those of 1949. The infestation expanded from a 1953 fall population of 163 borers per 100 plants (an estimated average of 19,560 borers per acre). Winter survival was high, 83.2 percent compared with an average survival of 73.2 percent. The average population of borers per acre in the spring of 1954 was 6,240, more than a five fold increase over the previous spring.

Seasonal conditions for borer development in central Iowa were good. The chronology of development is shown in the following table:

"SPRING"	1949	1950	1951	1952	1953	1954
Pupation	May 11 1/	May 18	May 17	May 8	May 19	May 12
Emergence (EPC) 2/	May 24	June 1	May 28	June 6	June 5	May 31
Moth Flight (L. trap)	--	June 8	May 28	June 2	June 3	June 1
Egg Laying	June 6	June 13	June 13	June 10	June 9	June 14
Egg Hatching	--	--	--	June 16	June 16	June 21

"SUMMER"						
Pupation	July 11 (85%)	July 31 (9%)	July 26 (12%)	July 14 (88%)	July 13 (80%)	July 16 (80%)
Emergence (EPC)	July 20	Aug. 4	July 30	July 24	July 27	July 23
Moth Flight (L. trap)	--	July 30	July 29	July 18	July 10	July 20
Egg Laying	Aug. 1	Aug. 14	Aug. 11	July 25	July 27	July 23
Egg Hatching	--	--	--	July 30	July 28	July 29

1/ Date refers to the first observation of each stage.

2/ EPC = empty pupal cases as a basis

Emergence of first brood moths was high and conditions for oviposition were good. In central Iowa a total of 4110 moths was taken in six light traps during the spring flight compared with 1452 under comparable conditions in 1953. Egg counts ranged from 15 to 400 masses per 100 plants, with a average of 162. Based on eggs deposited and resulting larvae that matured, field survival of this generation was 4 percent. Second-generation moth flight was heavy, 31,307 moths being taken in six traps as compared to 10,336 in 1953. Egg mass counts for this generation ranged from 20 per 100 plants to 1,190, with an average of 608. Second generation survival was estimated at 5.4 percent.

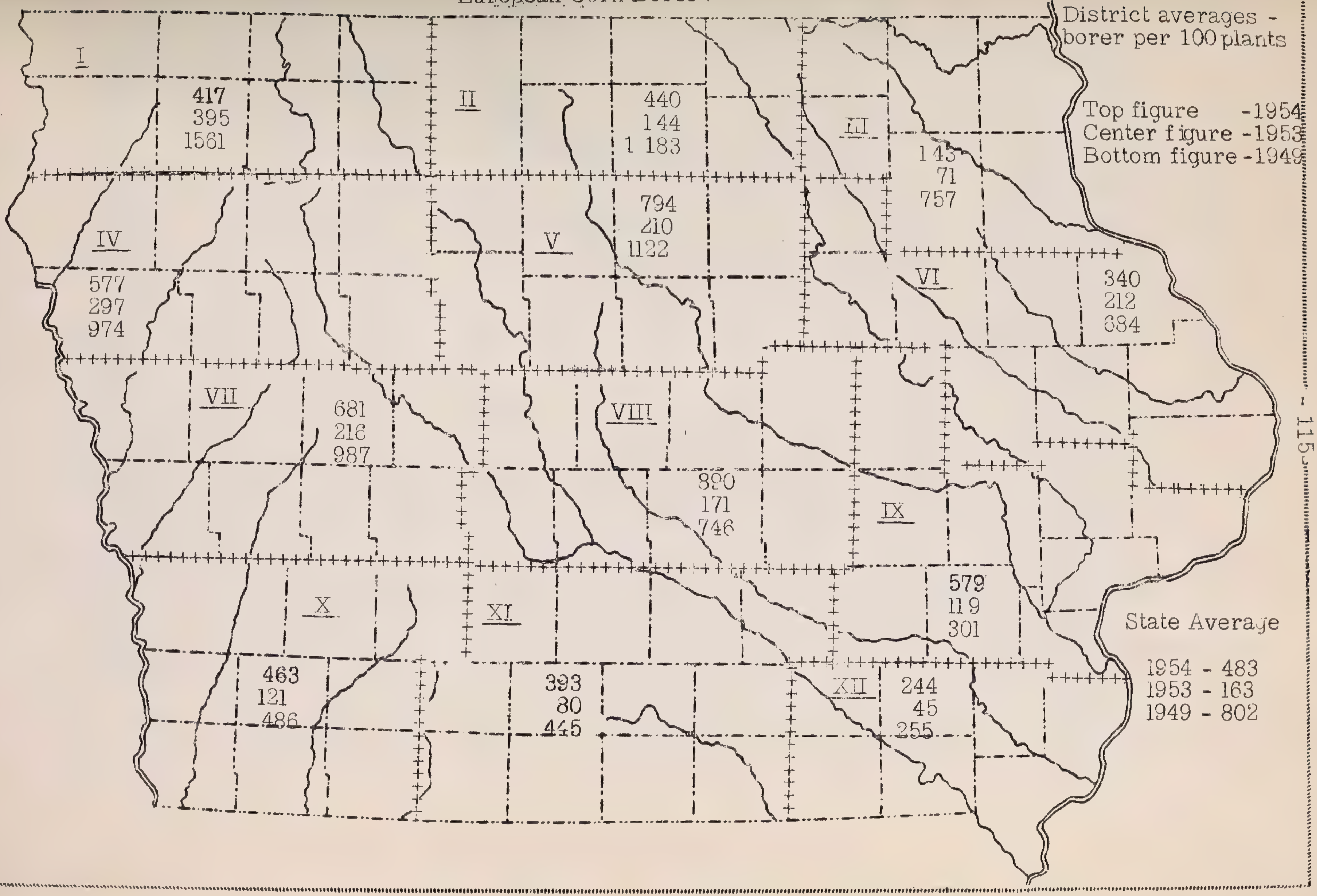
In southern Iowa population trends followed those of central Iowa, but at a lower level, possibly due to drought conditions there. In northern Iowa seasonal build-up was lower than anticipated, due mainly to unfavorable weather there during emergence of the spring moths. Low July temperatures caused an incomplete second generation in northern Iowa.

Fall survey data are shown in the following map, with records for 1949 and 1953 for comparison.

Other Cereal Insects
CORN EARWORM (Heliothis armigera) caused heavy damage over State. CUTWORMS (mainly Agrotis ypsilon) were very destructive in scattered local areas, mostly in southern half of State; populations averaged 3/4 to 1 per hill of corn. VARIEGATED CUTWORM (Peridroma margaritosa) was abundant in alfalfa in south half during May and early June, ranging from 2 to 15 per square foot. ARMYWORM (Pseudaletia unipuncta) - Scattered infestations in northern counties. In infested bluegrass averaged 5 to 6 per square foot. Heavy, general infestation of GRASSHOPPERS in southern part during hot dry period; 10 to 20 per square yard in hay and pasture, 15 to 50 per square yard in fencerows. TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) caused heavy damage to corn, soy beans and red clover in spots, mostly in central counties; 50 or more mites per square inch not uncommon but timely rains checked damage. CORN ROOTWORMS (mainly Diabrotica longicornis) infestation normal (10 to 75 per hill), but less plant lodging than usual due to dry weather. WIREWORMS (mainly Melanotus communis), increasing in importance, seriously destructive only in local areas; as high as 75 taken from a single bait trap. WHITE GRUBS (Phyllophaga rugosa and others) were locally destructive and apparently on increase; some fields with 5 to 10 per square foot. SEED-CORN BEETLES (Agonoderus lecontei)

IOWA

European Corn Borer Fall Abundance



were taken in tremendous numbers in light traps (12,700 in 6 traps on June 11), but crop damage light except in local areas. CHINCH BUG (*Blissus leucopterus*) increasing in southern Iowa, however not seriously destructive and only one or two minor migrations. CORN LEAF APHID (*Rhopalosiphum maidis*) was common in some fields but generally less abundant than usual. BILLBUGS (*Calendra* spp.) were less destructive than usual.

Legume and Forage Crop Insects

MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) was found in Allamakee and Winneshiek Counties, bringing the known infested counties to 22, all in the eastern third. PEA APHIDS (*Macrosiphum pisi*) were moderately abundant on red clover and alfalfa in southern part of state during early May. CLOVER LEAF WEEVIL (*Hypera punctata*) infestation moderate in southern third, treatment needed only in local areas. GARDEN WEBWORMS (*Loxostege similalis*) were very abundant on alfalfa and soybeans during summer, heaviest in southern half, but severe enough in north third to warrant treatment of 25,000 acres of soybeans; in alfalfa at Ames count of 33.5 larvae per sweep on August 2 not unusual. POTATO LEAFHOPPER (*Empoasca fabae*) was normally abundant, first collected on May 23. PLANT BUGS (Lygus, alfalfa and rapid), populations about normal; high counts at Ames last week of July: *Lygus* sp. - on alfalfa 2 per sweep, *Adelphocoris lineolatus* - on alfalfa 3 per sweep, *A. rapidus* - on both alfalfa and red clover 0.5 per sweep. ALFALFA CATERPILLAR (*Colias philodice eurytheme*) not destructive but adults much more abundant than usual in late August and September. CLOVER ROOT CURCULIO (*Sitona hispidula*) destroyed several acres of red clover, following first cutting, portion of field adjacent to plowed under red clover green manure crop.

Fruit and Nursery Insects

CODLING MOTH (*Carpocapsa pomonella*) infestations generally light over most of State. LESSER PEACH TREE BORER (*Synanthedon pictipes*) caused some damage in southwestern Iowa. APPLE MAGGOT (*Rhagoletis pomonella*) damaging in central and northern areas. TWO-SPOTTED and EUROPEAN RED MITES (*Metatetranychus ulmi*), moderate to heavy infestations, caused damage to apple in both the central and southwest parts State; resistance to parathion marked in some orchards. LEAF ROLLERS, especially abundant on strawberries, apples and raspberries.

Garden and Vegetable Insects

Melon and cucurbit pests present in usual abundance. The CORN EARWORM was exceptionally abundant and damaging on canning tomatoes in eastern Iowa in late September. Potato pests about normal.

Forest and Shade Tree Insects

HICKORY BARK BEETLE (*Scolytus quadrispinosus*) injured numbers, and in cases killed, bitternut and shagbark hickory in several state parks. LOCUST BORER (*Megacyllene robiniae*) continued as a major limiting factor in black locust stands, especially in southeastern areas. EUROPEAN PINE SAWFLY (*Neodiprion sertifer*) was a serious defoliator in several red pine plantations in southeastern Iowa. An IPS BEETLE (*Ips chagnoni*) was abundant and injurious on red pines which had suffered extensive defoliation by the European pine sawfly. CANKERWORMS (*Paleacrita vernata* and *Alsophila pometaria*) were especially injurious on street and shade trees. WHITE-MARKED TUSSOCK MOTH (*Hemerocampa leucostigma*), FALL WEBWORM (*Hyphantria cunea*), and GREEN-STRIPED MAPLEWORM (*Anisota rubicunda*) were unusually prevalent on shade trees. Datanas defoliated great numbers of walnuts and sumacs. SPIDER MITES and *Eriophyes* spp., were common. Coniferous species suffered especially heavy mite infestations. PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) was abundant. APHIDS common and abundant. Several infestations of SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) recorded. A LEAFHOPPER (*Scaphoideus luteolus*) present in usual numbers, phloem necrosis not uncommon in southeastern area. A COREID (*Leptoglossus clypealis*) was noted, nymphs and adults feeding on the seed and pruning scars of *Juniperus* spp. in southwestern part of State.

Livestock Pests

HOUSE and STABLE FLIES abundant throughout the summer in farm buildings, grass silage in trench silos important as a breeding place for house flies. HORN FLIES averaged between 150 and 500 per animal on cattle in pasture from early June until late August. HORSE and DEER FLIES not serious on livestock but various species troublesome to fishermen. WOOD TICKS about as abundant as usual, appearing on picnickers, dogs, and cattle during May and early June. First records in mid-April and somewhat earlier than usual. CATTLE MANGE and SCAB present in usual abundance; approximately one out of twenty of the many herds examined showed some mange symptoms . CATTLE LICE, both sucking and chewing, were present on cattle, the little red chewing louse being the most common; approximately 15 percent of herds had serious infestations in February. CATTLE GRUBS, present in practically all feeder animals brought into Iowa from western and southern states; approximately 70 percent of native calves showed populations ranging from 5 to 120 per animal, divided about equally between *Hypoderma lineatum* and *H. bovis.* HOG MANGE continued important to swine producers, but infested herds seem to be decreasing as more farmers treat sows prior to farrowing. SHEEP-TICK (keds) in some flocks observed in large numbers (100 to 150) on skin of sheared sheep, after perhaps 90 percent had been removed with the wool. SHEEP NOSE BOTS - 70 percent or more of the carcasses of mature sheep posted during winter months contained nasal grubs. SHEEP FLEECEWORMS (Wool maggots), very numerous during late April and May of 1954, but probably not more so than usual. SHEEP SCABIES prevalence dropped from the previous year. Only 1,490 head of sheep were placed under quarantine because of this serious parasite, compared with 1,810 in 1953. Approximately 42,000 head of sheep were sprayed at sale barns and stockyards as a preventive measure. No cases of attack by SCREWWORMS were recorded in 1954.

Stored-Product Pests

INDIAN-MEAL MOTH was present on surface of most CCC bins and elevator storage. Damage difficult to measure but infestation not as severe as in 1940 or 1950. SAW-TOOTHED GRAIN BEETLES were very abundant in 1954 oats and in 1952 corn delivered to CCC in fall of 1954; populations ranged from 5 to 100 per pint sample. RED-FLOUR BEETLE was third in abundance of stored grain pests in 1954. A skin BEETLE (Trogoderma parabile Beal) was reported first time in Iowa, found in ready-mixed warfarin rat bait; infestation controlled completely by recommended insecticides. DRUGSTORE BEETLE not common, but present in most counties.

Household Pests

BOXELDER BUGS building up slightly long river valleys, but not nearly as abundant as in 1940 or 1950. HOUSE FLY scarce in homes until August rains. BLOW FLY numbers increased in August and September. Big buildup of FRUIT FLIES in garbage cans, in gardens, and around canning plants in July, August, and September. Heavy fall populations of MOSQUITOES after August rain; severe nuisance in yards and gardens. FUNGUS BEETLES (Glischrochilus sp.) less numerous than in 1953, reduction possibly due to dry June and July. CASEBEARING CLOTHES MOTH reported frequently in 1954, appears to be increasing. CARPET BEETLES - four species common in Iowa; black most prevalent. ROACHES - five household species in Iowa, the oriental increasing problem in most towns, the brown-banded spreading and now found in nearly every county, the wood roach reported frequently. TERMITES present in every county, more and more control work being done in all large towns. Cat and dog FLEAS - late fall infestations in houses after August rains.

SUMMARY OF INSECT CONDITIONS - 1954

OREGON

Reported by V. D. Roth with the assistance of entomologists from the State Dept. of Agriculture, the Dept. of Entomology Oregon State College and other organizations.

A cool wet spring and summer throughout Oregon provided suitable conditions for a general increase in the aphid population. Low temperatures apparently caused delay in emergence of some insects. Surveys are being continued for the oriental fruit moth, European corn borer and Japanese beetle with negative results.

Cereal and Forage Crop Insects

SWEETCLOVER WEEVIL (Sitona cylindricollis) was found for the first time in eastern Oregon. It was reported on alfalfa from two widely-separated areas, Morrow County and near the Malheur-Baker County line. PEA LEAF WEEVIL (Sitona lineata) is spreading slowly south in the Willamette Valley having reached McMinnville in 1954. Some defoliation of red clover in the Hillsboro area. Because of abundance of the insect at threshing time in wheat fields adjacent to red clover and Austrian field peas many specimens were brought into the elevators and caused some concern over possibility of the wheat being graded down as being weevily. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) populations were smaller than for two years in central area, possibly due to control for Ladino clover flower midge. A CLOVER CASEBEARER (Coleophora spissicornis) was collected for the first time in Jefferson County. A survey of A LADINO CLOVER FLOWER MIDGE (Dasyneura gentneri) indicates it is found in most alsike and Ladino clover growing areas in Oregon except the Klamath Basin area. RED-BACKED CUTWORM (Euxoa ochrogaster) caused no noticeable damage in central area for third year in a row. The PEA APHID (Macrosiphum pisi) became quite abundant on Austrian field peas and hairy vetch in the Willamette Valley, and was very abundant on peas in the Blue Mountain area of eastern Oregon. A POLLEN BEETLE (Meligethes seminulum) infestations were lower than usual, lowest on red clover since before 1947. CLOVER APHID (Anuraphis bakeri) was unusually heavy on clover during April in central Oregon but was reduced below economic levels by hot weather before there was damage of economic importance. A GARDEN SLUG, (Deroceras reticulatum) has been very abundant the past few years in western Oregon causing much damage to a wide variety of crops. ALFALFA WEEVIL (Hypera postica) and

CLOVER LEAF WEEVIL (Hypera punctata) were in normal numbers. LYGUS populations were lower than usual in central Oregon and the Klamath Basin. APPLE GRAIN APHID (Rhopalosiphum prunifoliae) had much lower populations on wheat and barley than in 1953 in the Willamette Valley. Control of GRASSHOPPERS (Melanoplus mexicanus and M. femur-rubrum) was necessary in some seed fields in central area. In Klamath County about 15,000 acres were sprayed by aircraft for Camnula pellucida and M. femur-rubrum. About 3,000 acres of rangeland in Wallowa County was infested by economic numbers of C. pellucida. In Morrow County approximately 2,900 acres of rangeland were sprayed for M. mexicanus and some M. bivittatus. Over all the infestation was above that of 1953. MORMON CRICKETS (Anabrus simplex) occurred in very low numbers. No controls were necessary. Populations of the OMNIVOROUS LEAF TIER (Cnephasia longana) were down from 1953 except in scattered areas. In the Sheridan area the insect has been building up on wheat.

Vegetable Insects

MELON APHIDS (Aphis gossypii) appeared in numbers causing some damage in cucumbers, the first time observed since 1949. The GREEN PEACH APHID (Myzus persicae) was present in above normal numbers in Klamath, Willamette Valley and the Ontario area and caused some localized severe damage in potatoes including complete defoliation in Malheur County. Control measures were necessary for PEA LEAF WEEVIL on peas in Washington County. A BLACK BEAN APHID (Aphis sp.) did not build up beyond scattered colonies in Willamette Valley bean yards. WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata) was slightly less than normal. Early damage to corn was caused by CORN EARWORM (Heliothis armigera) in eastern Oregon. Later plantings had 68-100 percent infestation. In the Willamette Valley infestation reached about 1 percent infestation whereas it usually runs at least 5 percent. Damage by ONION MAGGOT (Hylemya antiqua) was heavy in early plantings in the Lake Labish area. Damage by BLACK CUTWORM (Agrotis ypsilon) and VARIEGATED CUTWORM (Peridroma margaritosa) to sweet corn and table beets in Willamette Valley was more serious than last year, particularly to corn. Damage was late and in some fields there was a 50-75 percent reduction in stand. CARROT RUST FLY (Psila rosae) caused as high as 50 percent cull carrots in nontreated crops in Lane County. At Milton-Freewater a mite tentatively identified as the TOMATO RUSSET MITE (Vasates lycopersici) practically destroyed a half acre planting of tomatoes. The plants had been brought in from areas where the mite is known to occur.

Fruit Insects

Surveys have been conducted for ORIENTAL FRUIT MOTH (*Grapholitha molesta*) with negative results for the third straight year at The Dalles. APPLE APHID (*Aphis pomi*) became very abundant on pear and apple trees causing damage to terminal shoots of smaller trees in Hood River area. A PEAR LEAF-ROLLING MIDGE (*Dasyneura sp. prob. pyri*) was found along with a mildew damaging almost 100 percent of the new leaves of pear in Marion County. APPLE RUST MITE (*Vasates schlechtendali*) PEAR RUST MITE (*Epitrimerus pyri*) and A PLUM MITE (*V. fockeui*) were all serious this year, the latter especially in Milton-Freewater area on prunes. BLACK CHERRY APHID (*Myzus cerasi*) was much more serious this year than last and apparently increasing in numbers. A TENTIFORM LEAF MINER (*Lithocolletis crataegella*) CHERRY CASEBEARER (*Coleophora pruniella*) and EYE-SPOTTED BUD MOTH (*Spilonota ocellana*) have been building up in the Willamette Valley and causing some damage, serious in isolated instances. In the Milton-Freewater area populations were very low. CHERRY FRUIT FLY (*Rhagoletis cingulata*) infestations were much below normal. CODLING MOTH (*Carpocapsa pomonella*) had very low infestations, even on unsprayed orchards the earlier apples almost untouched. PEAR-SLUG (*Caliroa cerasi*) was more abundant than normal, especially during the latter part of the season. LESSER APPLEWORM (*Grapholitha prunivora*) caused almost no damage in the Milton-Freewater area. PEAR THRIPS (*Taeniothrips inconsequens*) damage was very light. WESTERN PEACH TREE BORER (*Sanninoidea exitiosa graefi*) has not been causing much damage where control measures used. WOOLLY APPLE APHID (*Eriosoma lanigerum*) has been very abundant in the Willamette Valley and at Hood River. Controls necessary. AN APPLE PANDEMIS (*Pandemis pyrusana*) populations are down. High populations of A LEAFHOPPER (*Colladonus geminatus*) continue in The Dalles fruit growing area. This species is the most important vector of Western X virus disease on peaches and Western X little cherry on sweet and sour cherry. No controls have been worked out yet.

Small Fruit Insects

STRAWBERRY APHID (*Capitophorus fragaefolii*) had heavy populations in the northern Willamette Valley. This was the second consecutive year of abundance with much virus being spread among the strawberries. Light infestations of ORANGE TORTRIX (*Argyrotaenia citrana*) were noted in northern Willamette Valley. In the same area STRAWBERRY CROWN MINER (*Aristotelia fragariae*) was present in greater number than usual. STRAWBERRY WEEVILS continue to be a serious problem to both the strawberry and cranberry growers. There was a severe infestation of CYCLAMEN MITE (*Tarsonemus pallidus*) on Northwestern variety strawberries in Coos County.

Nut Insects

WALNUT APHID (*Chromaphis juglandicola*) and A DUSKY-VEINED WALNUT APHID (*Panaphis juglandis*) were very abundant, probably because of the cool and wet summer. Some leaf drop noted. A FILBERT LEAFROLLER (*Archips rosana*) was serious in unsprayed orchards. FILBERTWORM (*Melissopus latiferreanus*) was quite abundant in the McMinnville area and less severe in other areas. A FILBERT APHID (*Myzocallis coryli*) has been very abundant in 1954 with earlier and heavier infestations than previously observed in this area. FILBERT BUD MITE (*Phytoptus avellanae*) has been quite serious on loose budded varieties.

Household, Stored Grain Insects and Others

A WEEVIL (*Trachyphloeus bifoveolatus*) was reported as a nuisance in houses in Multnomah, Clackamas and Washington Counties. The larvae of a TINEID (*Tinea fuscipunctella*) was found feeding in considerable numbers in the Firtex ceiling of a turkey barn near St. Helens. Reports of TERMITES and CARPENTER ANTS (*Camponctus* spp.) in houses in the Willamette Valley are increasing. The LESSER GRAIN BORER (*Rhyzopertha dominica*) was picked up at Albany, first record outside of Portland where it has been taken on incoming shipments of grain. A SCARAB (*Aphodius pardalis*) was found in large numbers, 250-300 per square foot damaging turf in fairways on a golf course at Eugene in April.

Insects Affecting Man and Animals

HEEL FLIES (*Hypoderma* spp.) activity increased over 1953. HORN FLY (*Siphona irritans*) population was about normal. AEDES MOSQUITOES (especially *Aedes communis* and *A. hexodontus*) were normally abundant above the 4000 foot level in the Cascades. Other species (*Aedes dorsalis*, *Culex tarsalis* and *Anopheles freeborni*) have been increasing in the Summer Lake area because of an increase of irrigated pasture. DEER FLIES (*Chrysops* and *Hybomitra*) have decreased in Summer Lake area while *Tabanus* sp. are increasing.

Insects Affecting Ornamental Trees and Shrubs

Damage by FALL WEBWORM (*Hyphantria cunea*), SATIN MOTH (*Stilpnotia salicis*), *Halisidota argentata*, and ELM LEAF BEETLE (*Galerucella xanthomelaena*) was normal. TENT CATERPILLARS (*Malacosoma* spp. especially *M. disstria*) occurred in epidemic numbers in the Willamette Valley and the northern coastal regions. Some unsprayed orchards were defoliated as well as many roadside stands of wild apple, rose, willow and hawthorn. In many areas the caterpillars starved after defoliating the shrubs and trees but where the infestation was lighter there will probably be another outbreak in 1955. In the central Willamette Valley A JUMPING

GALL WASP (*Neuroterus saltatorius*) appeared in great numbers causing browning up to 100 percent of the leaf surfaces. BARK BEETLES (*Phloeosinus sequoiae* and *P. rubicundulus*) have been attacking Port Orford cedar, usually following attacks of a fungus (*Phytophthora* sp.), at Salem on ornamental plantings and at Coos Bay in part trees. There have been scattered infestations of SOFT SCALE (*Coccus hesperidum*) on holly in Willamette Valley. This pest is a serious problem in those areas where it exists. A HOLLY BUD MOTH (*Rhopobota naevana ilicifoliana*) has been less abundant than normal. Damage to young Douglas fir trees by a NEEDLE MINER was reported in the Willamette Valley area. This is similar to that causing serious damage to Christmas trees in the Rocky Mountains region. Infestations of a GALL WASP (*Bassettia ligni*) on valley oak which had been increasing since 1950 have dropped off to almost none in 1954.

Forest Insects

(Abstracted from the 1954 "Report of Forest Insect Surveys" published by the Oregon State Board of Forestry and the Pacific Northwest Forest and Range Experiment Station.)

The DOUGLAS FIR BEETLE (*Dendroctonus pseudotsugae*) and SPRUCE BUDWORM (*Choristoneura fumiferana*) continued to be the most destructive insects to Oregon forests. In 1954 approximately 1,006,440 acres, in the northeastern section of the State were infested by the spruce budworm, 42.2 percent of the total with light epidemic infestations, 34.1 percent with moderate epidemic infestations,20.7 percent with heavy epidemic infestations and 3 percent with very heavy epidemic infestations. Of the total only 68,000 acres were treated at a cost of $62,670. Surveys of the Douglas fir beetle indicates epidemic infestations on 3,971,850 acres in western Oregon and 648,690 acres in eastern Oregon. Many of the trees previously weakened by the spruce budworm are being killed. Dead and dying timber is being salvaged in some cases but no controls were attempted. A LODGEPOLE PINE SAWFLY (*Neodiprion* sp.) outbreak in 1953 covered 69,000 acres. In 1954 it subsided with only light feeding evident.

The following table lists the total acreage of infestation by intensities:

Insect	Number Centers of Infest.	Light	Moderate	Heavy	Very Heavy	Total
Doug.-fir beetle	738	1,509,450	1,764,160	982,908	183,950	4,440,540
Eng. spr. beetle	3	480	3,680	2,080	0	6,240
Fir engraver	27	5,000	12,320	2,600	7,320	27,240
Mt. pine beetle	95	33,280	14,420	16,060	10,400	74,160
Pine engraver	49	5,940	6,660	21,730	2,000	36,330
Sil. fir beetles	12	1,920	13,190	1,280	0	16,390
Spruce aphid	1	0	0	160	0	160
Spruce budworm	14	410,750	349,530	214,220	31,540	1,006,040
W. pine beetle	139	136,010	14,520	2,880	320	153,730

Beneficial Insects

BEES - The Apiary Inspectors of the State Department of Agriculture inspected 1,395 apiaries of which 231 or 16.56 percent were infected with American or European foul brood. There was a total of 17,847 colonies, 687 or 3.84 percent infected with AFB and 154 or .86 percent with EFB. The total number of apiaries infected showed an increase of 1.06 percent over 1953.

SURVEY METHODS

Classification of Infestations of Livestock Pests

The following methods of determining insect infestations are used primarily for research investigations and the techniques may need adjusting to meet field survey conditions.

CATTLE GRUBS - Examine infested portion of animal's back. When average number of cysts (grubs) per animal is 1 - 10, light; 11 - 20, medium; over 20, heavy. NOTE: Yearlings and bulls usually more heavily infested than older or younger animals.

HORN FLIES - Count or estimate number of flies on ten animals in herd. Average number of flies per animal 1 - 25, light; 26 -100, medium; over 100, heavy. NOTE: Flies will be more difficult to count in the cool and extreme hot hours of the day. Bulls and dark-colored animals will usually carry heavier infestations than other animals in the herd.

HORSE FLIES and DEER FLIES - Count number of flies visiting animal for a 15 minute period. Average count of 1 - 5 per animal, light; 6 - 10, medium; 11 or more, heavy.

STABLE FLIES - Usually the heaviest feeding of flies will be observed from 9:00 to 10:00 A. M. and 3:00 to 5:00 P. M. Count number of flies feeding on animal. Average count per animal of 1 - 5, light; 6 - 10, medium; 11 or more, heavy.

CATTLE LICE - A. Sucking species - Observe and examine animals for greasy appearance on dewlap and poll or neck and the presence of lice on muzzle, around eyes and in brush of tail. Occasional louse observed, light; 5 - 10 lice per examination area, medium; over 11, heavy. B. Chewing species - Observe and examine animals for loss of hair, rubbing, etc. Part hair for examination. Occasional louse observed, light; 5 - 10 lice per examination, medium; over 11, heavy. NOTE: Abundance of lice in herd largely influenced by seasonal changes and individual susceptibility of host.

GOAT LICE - Part hair in 5 places. One on neck, one on each side and two on belly. Estimate number of lice per hair part. Average lice per goat 1 - 10, light; 11 - 25, medium; 26 or more, heavy.

HOG LICE - Examine behind ears and fore legs, on belly and between hind legs. Count lice observed. Average lice per animal: light - 1 - 10; 11 - 20, medium; and over 20, heavy.

POULTRY LICE - Examine 5 fowls, part feathers in 5 places under each wing, vent, back and breast or neck. Count lice at each part. Average number of lice per fowl 1 - 5, light; 6 - 10, medium; 11 or more, heavy.

FOWL TICK - Examine both fowls and premises. A. Larvae on fowls - Make counts under each wing, on inside of each leg and near vent. Average number of larvae per bird 1 - 5, light; 6 - 10, medium; over 11, heavy. B. Adults on premises - Examine roosts, nests, etc. Adults hard to find, light; adults readily noticeable, medium; adults plentiful, heavy.

ROOST MITES - Examine roosts and nests for presence of mites. Occasional mite observed, light; readily observed, medium; numerous, heavy.

FLEAS - A. Sticktight - Examine comb and wattle of 5 birds. Count number of attached fleas. Average count per bird 1 - 5, light; 6 - 10, medium; 11 or more, heavy. B. Dog and cat fleas - Walk around infested premises and estimate number of fleas on pants leg in one minute. 1 - 5, light; 6 - 10, medium; 11 or more, heavy.

LONE STAR TICKS and WINTER TICKS - Examine foot square area in 5 places on animal. One on each side of neck, one on each side and escutcheon. Estimate number of ticks present in each area. Average tick count per animal 1 - 10, light; 11 - 25, medium; more than 26, heavy.

GULF COAST TICKS - Examine outer surface of ears. Count number of ticks on ear. Average number of ticks per ear 1 - 5, light; 6 - 10, medium; 11 or more, heavy.

EAR TICKS - Examine folds on inner surface of ear. Count number of ticks without removal, if possible. Average number of ticks per ear 1 - 10, light; 11 - 20, medium; over 20, heavy.

FLEECEWORMS - Examine areas of soiled fleece. More prevalent during warm, humid weather conditions. One case in 100 animals, light; 2 - 3 cases in 100 animals, medium; 4 or more cases in 100 animals, heavy.

SCREW-WORMS - Examine animals or obtain information from ranchers, farmers, veterinarians and insecticide dealers. Less than one case per 100 animals, light; 1 - 2 cases per 100 animals, medium; more than 2 cases per 100 animals, heavy.

SHEEP KEDS - Count pupae and adults by parting wool - 25 parts, mostly on body of animal. Average count of 1 - 5, light; 6 - 10, medium; more than 11, heavy.

FOWL MITES - Examine for presence of mites in feathers. Part feathers in 5 places. Estimate number of mites under each wing, on each side and about vent. Average number of mites per fowl 1 - 10, light; 11 - 25, medium; 26 or more, heavy.
(C. L. Smith, W. S. McGregor).